

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): David G. Fullington, et al.  
Serial No.: 10/730,430  
Filed: December 8, 2003  
For: Apparatus and Method for Disabling the Operation of High Power Device  
Examiner: Lucy M. Thomas  
Art Unit: 2836  
Docket No.: 03AB237 (1506.003)

**REMARKS ACCOMPANYING  
PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In an Office Action dated September 25, 2007, the Examiner rejected claims 1, 3, 4, 6-80, 10-15 and 24 as being unpatentable over the prior art. Specifically, claims 1, 3, 7, 8, 11, 15 and 24 were rejected as being obvious over Schwesig in view of DeDecker. This was the *second or subsequent* rejection with respect to independent claims 1 and 24. This case is therefore ripe for appeal.<sup>1</sup> Applicants have filed a Notice of Appeal simultaneously herewith.

The rejections contain clear errors and omissions of one or more essential elements needed for a *prima facie* rejection. As such, applicants hereby request that a pre-appeal brief review be conducted in accordance with the Pre-Appeal Brief Conference Pilot Program that was initiated on July 12, 2005 and extended indefinitely on January 10, 2006.

Briefly described, the invention relates to an electrical drive for a motor, where the drive may be safely disabled, for example, to allow a person to work on a machine powered by the motor. In this regard, is absolutely critical that a fault in the motor drive not allow the motor to be activated. This level of safety is obtained in a complex motor drive by interrupting communication between the motor drive logic circuit and its output semiconductors (which connect directly to the motor) by means of a connected "safety relay". "Safety relay" is a term of art describing a type of electromechanical relay intended for use in circuits where human life or

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<sup>1</sup> 35 USC §134 and 37 CFR §1.191. See also *ex Parte Lemoine*, 46 USPQ2d 1420, 1423 (BPAI 1998) ("Under our interpretation, so long as the applicant has twice been denied a patent, an appeal may be filed.")

limb may be in jeopardy and providing redundant contacts, conductors and mechanical interlocks preventing false actuation. In the invention, the marriage of a simple safety relay to the complex circuitry of the motor drive invests the motor drive with the same level of reliability of the safety relay. This marriage is preferably accomplished by a set of ports that allow access to the internal circuitry of the motor drive to be connected to an externally mounted safety relay.

The primary reference of Schwesig relates to a motor drive that is also intended to be safely disabled. In this case, safety is provided by dual microprocessors that must both fail before the motor may be accidentally started. While the Schwesig reference addresses the same problem as the present invention, it adopts a completely different approach to this problem relying on increased complexity of dual microprocessors rather than on the decreased complexity of a safety relay. The Schwesig approach has the shortcoming that the motor might accidentally start if there is a systematic error reproduced in both microprocessors or their software, such that they both experience the same failure. Such consistent errors are quite possible in complex circuitry and software. In the event of such systematic error, the motor could start when this is not intended.

The Examiner's rejection of the present invention contains clear errors and/or omissions of elements needed to establish *prima facie* rejections based on obviousness. The clear errors and/or omission of essential elements needed for a *prima facie* will now be discussed for the two independent claims 1 and 24:

**1. Rejection of Independent Claims 1 as being Obvious over Schwesig in view of DeDecker**

The Examiner's rejection of claim 1 as being obvious over Schwesig in view of DeDecker contains the following errors:

- Claim 1 requires "a safety relay". In his rejection of claim 1 on paragraph 1 of page 2 of the Office Action, the Examiner states " Schwesig discloses... a safety relay S1, S2 to control the application of power to the low powered circuit." S1, S2 of Schwesig are designated as electrical or mechanical switches. Inferentially, the mechanical switches would be relays, but they are clearly not safety relays, a term of art which refer to a particular type of relay having

features making them suitable for safety circuitry. Nor are safety relays (or relays at any time) found in the DeDecker reference. Accordingly, the Examiner has failed to find a critical element of claim 1 in the cited references alone or in combination.

- Claim 1 also requires that the "safety relay" be "electrically isolated" from the logic circuit. This is necessary so that an error in the logic circuit does not override the safety relay. In contrast, the switches S1, S2 of Schwesig are electrically connected to and controlled by the logic circuit (microprocessors I1, I2) as can be seen in Fig. 1a. Such an electrical connection is the opposite of being electrically isolated as required by claim 1. As a practical matter, this electrical connection means that a failure of microprocessors I1, I2 can activate switches S1 and S2 starting the motor. Schwesig fundamentally teaches away from the present invention both in structure and function. DeDecker teaches a watchdog timer circuit implementing a time delay control for a valve. There is no teaching of how this time delay circuit would be incorporated into a motor drive circuit, or how it would provide any level of safety in the control of the motor drive.

**2. Rejection of dependent Claim 24 as being Obvious over Schwesig in view of DeDecker**

Claim 24 requires set of "ports" allowing "connection" of the safety relay to the low powered circuitry of the motor drive. The ports are shown in the figures as terminal blocks. The Examiner has found no evidence any ports in the Schwesig and DeDecker references. Nor has the Examiner found any teaching in Schwesig and DeDecker for providing a connection point for an electrically independent safety relay to the low powered circuitry of the motor drive. The Schwesig reference is consistent with a motor drive that is fully integrated and prohibits access to its internal low powered circuitry through a port.

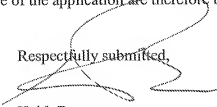
**CONCLUSIONS**

For the above reasons, it is believed that both independent claims 1 and 24 patentably define over the cited references and the Examiner made clear errors and/or omitted essential elements needed for *prima facie* rejections, in his Office Action. Reconsideration by the panel,

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withdrawal of the rejections, and allowance of the application are therefore believed in order and are respectfully requested.

Respectfully submitted,



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Dated: January 17, 2008

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